

US0024456

## PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

BRUEGGEMANN, James, R.  
Sheppard, Mullin, Richter &  
Hampton LLP  
48th floor  
333 South Hope Street  
Los Angeles, CA 90071  
ETATS-UNIS D'AMERIQUE

Date of mailing (day/month/year) 30 January 2002 (30.01.02)	<b>IMPORTANT NOTIFICATION</b>
Applicant's or agent's file reference VFA-70871	
International application No. PCT/US00/24456	International filing date (day/month/year) 01 September 2000 (01.09.00)

## 1. The following indications appeared on record concerning:

☒ the applicant
                 
 ☐ the inventor
                 
 ☐ the agent
                 
 ☐ the common representative

## Name and Address

BULAR, LLC  
6715 Daryn Drive  
West Hills, CA 91307  
United States of America

## State of Nationality

US

## State of Residence

US

Telephone No.

Facsimile No.

Teleprinter No.

## 2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person
                 
 ☐ the name
                 
 ☒ the address
                 
 ☐ the nationality
                 
 ☐ the residence

## Name and Address

BULAR, LLC  
4730 Calle Quetzal  
Camarillo, CA 93012  
United States of America

## State of Nationality

US

## State of Residence

US

Telephone No.

Facsimile No.

Teleprinter No.

## 3. Further observations, if necessary:

## 4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Authorized officer

R. Chrem

Facsimile No.: (41-22) 740.14.35

Telephone No.: (41-22) 338.83.38

**PATENT COOPERATION TREATY**  
**PCT**

**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>VFA-70871</b>	<b>FOR FURTHER ACTION</b>		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. <b>PCT/US00/24456</b>	International filing date (day/month/year) <b>01/09/2000</b>	Priority date (day/month/year) <b>03/09/1999</b>	
International Patent Classification (IPC) or national classification and IPC <b>C03B37/014</b>			
Applicant <b>BULAR, LLC et al.</b>			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 6 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 17 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  <b>29/03/2001</b>	Date of completion of this report  <b>02.11.2001</b>
Name and mailing address of the international preliminary examining authority:  <b>European Patent Office</b> <b>D-80298 Munich</b> Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  <b>De Ruiter, F</b>  Telephone No. +49 89 2399 2921 

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/24456

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C03B37/014 C03B19/14

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C03B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 1998, no. 1, 30 January 1998 (1998-01-30) -& JP 09 227148 A (FUJIKURA LTD.), 2 September 1997 (1997-09-02) abstract; figures 1-3	1,16
X	PATENT ABSTRACTS OF JAPAN vol. 18, no. 157, 16 March 1994 (1994-03-16) -& JP 05 330844 A (FUJIKURA LTD.), 14 December 1993 (1993-12-14) abstract; figures 1-3,5  -/-	1,16

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*G\* document member of the same patent family

Date of the actual completion of the international search

5 December 2000

Date of mailing of the international search report

12/12/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Stroud, J

# INTERNATIONAL SEARCH REPORT

Intern 1al Application No

PCT/US 00/24456

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 8, no. 56, 14 March 1984 (1984-03-14) & JP 58 213647 A (FURUKAWA ELECTRIC CO. LTD. & NT&T CORP.), 12 December 1983 (1983-12-12) abstract ----	1,16
X	US 4 915 717 A (M.WATANABE ET AL.) 10 April 1990 (1990-04-10) figures 3-6 ----	1,16
X	PATENT ABSTRACTS OF JAPAN vol. 4, no. 34, 22 March 1980 (1980-03-22) -& JP 55 007508 A (NT&T CORP.), 19 January 1980 (1980-01-19) abstract; figures 2,5,6 ----	1,16
X	US 4 414 012 A (S.SUTO ET AL.) 8 November 1983 (1983-11-08) column 18, line 30 -column 19, line 6; figures 18A,18B ----	1,16
X	PATENT ABSTRACTS OF JAPAN vol. 14, no. 242, 23 May 1990 (1990-05-23) -& JP 02 064036 A (FUJIKURA LTD.), 5 March 1990 (1990-03-05) abstract; figures 1-5 ----	1,16
X	PATENT ABSTRACTS OF JAPAN vol. 18, no. 322, 20 June 1994 (1994-06-20) & JP 06 072733 A (FURUKAWA ELECTRIC CO. LTD.), 15 March 1994 (1994-03-15) abstract ----	1,16
A	PATENT ABSTRACTS OF JAPAN vol. 17, no. 1, 5 January 1993 (1993-01-05) & JP 04 240125 A (SUMITOMO ELECTRIC IND. LTD.), 27 August 1992 (1992-08-27) abstract -----	1,16

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/24456

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 09227148 A	02-09-1997	NONE	
JP 05330844 A	14-12-1993	NONE	
JP 58213647 A	12-12-1983	JP 1588519 C JP 2010094 B	19-11-1990 06-03-1990
US 4915717 A	10-04-1990	EP 0150247 A AU 566069 B AU 2398084 A CA 1233080 A DE 3474657 D	07-08-1985 08-10-1987 08-08-1985 23-02-1988 24-11-1988
JP 55007508 A	19-01-1980	JP 1111911 C JP 57002660 B	16-09-1982 18-01-1982
US 4414012 A	08-11-1983	JP 1046459 B JP 1581667 C JP 57170832 A JP 1255878 C JP 57170833 A JP 59034661 B JP 1445256 C JP 57051144 A JP 62053450 B JP 57056335 A JP 1436651 C JP 57082131 A JP 62030144 B JP 1436652 C JP 57082132 A JP 62030145 B JP 57092530 A CA 1188895 A DE 3136429 A FR 2489808 A GB 2083806 A,B NL 8104196 A,B, KR 8601248 B	09-10-1989 11-10-1990 21-10-1982 12-03-1985 21-10-1982 23-08-1984 30-06-1988 25-03-1982 10-11-1987 03-04-1982 25-04-1988 22-05-1982 30-06-1987 25-04-1988 22-05-1982 30-06-1987 09-06-1982 18-06-1985 09-06-1982 12-03-1982 31-03-1982 01-04-1982 01-09-1986
JP 02064036 A	05-03-1990	NONE	
JP 06072733 A	15-03-1994	NONE	
JP 04240125 A	27-08-1992	NONE	

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/US00/24456

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims 1-31
	No: Claims
Inventive step (IS)	Yes: Claims 1-31
	No: Claims
Industrial applicability (IA)	Yes: Claims 1-31
	No: Claims

2. Citations and explanations  
**see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Reference is made to the following document:

- D1: PATENT ABSTRACTS OF JAPAN vol. 1998, no. 1, 30 January 1998  
(1998-01-30) -& JP 09 227148 A (FUJIKURA LTD.), 2 September 1997  
(1997-09-02)
- D2: PATENT ABSTRACTS OF JAPAN vol. 18, no. 157, 16 March 1994  
(1994-03-16) -& JP 05 330844 A (FUJIKURA LTD.), 14 December 1993  
(1993-12-14)
- D3: PATENT ABSTRACTS OF JAPAN vol. 14, no. 242, 23 May 1990  
(1990-05-23) -& JP 02 064036 A (FUJIKURA LTD.), 5 March 1990  
(1990-03-05)

2. An apparatus as defined in lines 2 to 10 of claim 1, a burner comprising the features mentioned in the first four and the last three lines of claim 15, and a method having the features defined in the first 8 lines, the thirteenth and fourteenth lines and the sixteenth and seventeenth lines of this claim are well known in the art, as the applicants admits in the description of figures 4 and 5 (page 4, line 7 to page 5, line 8). The deposition rates of such apparatus normally increase until the rod, formed by the mandrel and the deposited soot, has a diameter of about 12 cm. One of the reasons for this lack of linearity is that, for large rod diameters, the flame length of the burner is inadequate to provide a thermophoretic driving force around the entire circumference of the rod. Also less heat is applied to the rod surface, this by higher surface speeds of the rod, and also greater heat losses from this surface occur. Increasing the flame length for maintaining the deposition temperature also requires an increase of the amount of reactants fed to the burner, which causes turbulences in the deposition zone. These turbulences can be reduced by withdrawing the burner from the rod, but this results again in an inadequate flame length. The invention proposes, in claims 1, 15 and 26, to provide the main deposition burner with two divergent reacting ports for producing two of the streams of soot forming reactants, such ports being located on opposite sides of the burner's central axis, such that the two streams of



soot forming reactants impinge substantially quasi-tangentially on the glass preform, on opposite sides of the longitudinal axis of the preform, this to reduce turbulence formation in the streams at the side of the preform.

The document D1 provides two divergent streams of soot streams. These streams are only formed with growing rod diameter, this by an adjusting gas stream blown between the two soot streams, and to increase the deposition range. There is no indication here that the two soot streams should impinge on the surface of the rod substantially quasi tangentially, for reducing turbulence. D2 and D3 disclose other means for increasing the deposition range upon increasing rod diameter. The other documents cited in the international search report are further removed from the invention. Therefore none of these documents discloses or suggests the above features of claims 1, 15 and 26 proposed by the invention.

Also an apparatus as defined in the first nine lines of claim 13 is well known in the art. Here, according to the invention, one or more auxiliary burners are provided that are configured to introduce one or more streams of flame gases, but no stream of soot forming reactants, to heat those portions of the preform that are not adequately heated by the main deposition burner. These auxiliary burners are controlled to operate after the preform has reached a predetermined diameter.

By these differing features the main deposition burner can be configured such that the first two functions of this burner, mentioned in the paragraph bridging pages 4 and 5, that is, the generation of soot and the provision of a thermophoretic driving force, can be performed the best. Although deposition systems with more burners are known in the art, these burners all provide streams of soot forming reactants. Systems in which the auxiliary burners only provide flames are not known, and are also not suggested by the available prior art documents.

Consequently, the independent claims 1, 13, 15 and 26 appear to meet the requirements of Articles 33(2), (3) and (4) PCT.

As in the dependent claims 2 to 12, 14, 16 to 25 and 27 to 31 preferred embodiments of the invention are defined, also these claims appear to meet the requirements of the above articles.

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/US00/24456

**Re Item VII**

**Certain defects in the international application**

1. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1, D2 and D3 is not mentioned in the description, nor are these documents identified therein.
2. The features of the claim/s are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

14  
RECD 06 NOV 2001

Applicant's or agent's file reference <b>VFA-70871</b>	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. <b>PCT/US00/24456</b>	International filing date (day/month/year) <b>01/09/2000</b>	Priority date (day/month/year) <b>03/09/1999</b>
International Patent Classification (IPC) or national classification and IPC <b>C03B37/014</b>		
Applicant <b>BULAR, LLC et al.</b>		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 6 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 17 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  <b>29/03/2001</b>	Date of completion of this report  <b>02.11.2001</b>
Name and mailing address of the international preliminary examining authority:   <b>European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465</b>	Authorized officer  <b>De Ruiter, F</b>  Telephone No. <b>+49 89 2399 2921</b>  

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US00/24456

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

### Description, pages:

1-21 as originally filed

### Claims, No.:

1-31 as received on 29/09/2001 with letter of 26/09/2001

### Drawings, sheets:

1/10-10/10 as received on 06/04/2001 with letter of 03/04/2001

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/US00/24456

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims 1-31
	No: Claims
Inventive step (IS)	Yes: Claims 1-31
	No: Claims
Industrial applicability (IA)	Yes: Claims 1-31
	No: Claims

- 2. Citations and explanations**  
**see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

---

International application No. PCT/US00/24456

**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Reference is made to the following document:

- D1: PATENT ABSTRACTS OF JAPAN vol. 1998, no. 1, 30 January 1998  
(1998-01-30) -& JP 09 227148 A (FUJIKURA LTD.), 2 September 1997  
(1997-09-02)
- D2: PATENT ABSTRACTS OF JAPAN vol. 18, no. 157, 16 March 1994  
(1994-03-16) -& JP 05 330844 A (FUJIKURA LTD.), 14 December 1993  
(1993-12-14)
- D3: PATENT ABSTRACTS OF JAPAN vol. 14, no. 242, 23 May 1990  
(1990-05-23) -& JP 02 064036 A (FUJIKURA LTD.), 5 March 1990  
(1990-03-05)

2. An apparatus as defined in lines 2 to 10 of claim 1, a burner comprising the features mentioned in the first four and the last three lines of claim 15, and a method having the features defined in the first 8 lines, the thirteenth and fourteenth lines and the sixteenth and seventeenth lines of this claim are well known in the art, as the applicants admits in the description of figures 4 and 5 (page 4, line 7 to page 5, line 8). The deposition rates of such apparatus normally increase until the rod, formed by the mandrel and the deposited soot, has a diameter of about 12 cm. One of the reasons for this lack of linearity is that, for large rod diameters, the flame length of the burner is inadequate to provide a thermophoretic driving force around the entire circumference of the rod. Also less heat is applied to the rod surface, this by higher surface speeds of the rod, and also greater heat losses from this surface occur. Increasing the flame length for maintaining the deposition temperature also requires an increase of the amount of reactants fed to the burner, which causes turbulences in the deposition zone. These turbulences can be reduced by withdrawing the burner from the rod, but this results again in an inadequate flame length. The invention proposes, in claims 1, 15 and 26, to provide the main deposition burner with two divergent reacting ports for producing two of the streams of soot forming reactants, such ports being located on opposite sides of the burner's central axis, such that the two streams of

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/US00/24456

soot forming reactants impinge substantially quasi-tangentially on the glass preform, on opposite sides of the longitudinal axis of the preform, this to reduce turbulence formation in the streams at the side of the preform.

The document D1 provides two divergent streams of soot streams. These streams are only formed with growing rod diameter, this by an adjusting gas stream blown between the two soot streams, and to increase the deposition range. There is no indication here that the two soot streams should impinge on the surface of the rod substantially quasi tangentially, for reducing turbulence. D2 and D3 disclose other means for increasing the deposition range upon increasing rod diameter. The other documents cited in the international search report are further removed from the invention. Therefore none of these documents discloses or suggests the above features of claims 1, 15 and 26 proposed by the invention.

Also an apparatus as defined in the first nine lines of claim 13 is well known in the art. Here, according to the invention, one or more auxiliary burners are provided that are configured to introduce one or more streams of flame gases, but no stream of soot forming reactants, to heat those portions of the preform that are not adequately heated by the main deposition burner. These auxiliary burners are controlled to operate after the preform has reached a predetermined diameter.

By these differing features the main deposition burner can be configured such that the first two functions of this burner, mentioned in the paragraph bridging pages 4 and 5, that is, the generation of soot and the provision of a thermophoretic driving force, can be performed the best. Although deposition systems with more burners are known in the art, these burners all provide streams of soot forming reactants. Systems in which the auxiliary burners only provide flames are not known, and are also not suggested by the available prior art documents.

Consequently, the independent claims 1, 13, 15 and 26 appear to meet the requirements of Articles 33(2), (3) and (4) PCT.

As in the dependent claims 2 to 12, 14, 16 to 25 and 27 to 31 preferred embodiments of the invention are defined, also these claims appear to meet the requirements of the above articles.

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

---

International application No. PCT/US00/24456

**Re Item VII**

**Certain defects in the international application**

1. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1, D2 and D3 is not mentioned in the description, nor are these documents identified therein.
2. The features of the claim/s are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).



## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>VFA-70871</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/US 00/ 24456</b>	International filing date (day/month/year) <b>01/09/2000</b>	(Earliest) Priority Date (day/month/year) <b>03/09/1999</b>
Applicant <b>BULAR, LLC et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

7  
☐ None of the figures.

**Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)**

An apparatus is described for making a glass preform by flame hydrolysis. The apparatus includes a main deposition burner configured to direct two or more streams of soot-forming reactants and a stream of flame gases into a deposition chamber, in a direction toward a rotating support mandrel, so as to form by flame hydrolysis a glass preform on the mandrel. One or more pairs of auxiliary burners may also be included, for introducing further streams of flame gases, but no streams of soot-forming reactants, toward the glass preform, from opposite lateral sides of the main deposition burner; to provide additional heat when the preform has reached a predetermined size, thereby improving efficiency. The main deposition burner is configured to direct the two or more of the streams of soot-forming reactants to impinge quasi-tangentially toward the mandrel and, further, to direct the stream of flame gases obliquely inwardly toward the two or more streams of soot-forming reactants, to narrow the flame's width along one or both of two orthogonal axes

## INTERNATIONAL SEARCH REPORT

International Application No

US 00/24456

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 C03B37/014 C03B19/14

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C03B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 1998, no. 1, 30 January 1998 (1998-01-30) -& JP 09 227148 A (FUJIKURA LTD.), 2 September 1997 (1997-09-02) abstract; figures 1-3 ---	1, 16
X	PATENT ABSTRACTS OF JAPAN vol. 18, no. 157, 16 March 1994 (1994-03-16) -& JP 05 330844 A (FUJIKURA LTD.), 14 December 1993 (1993-12-14) abstract; figures 1-3,5 --- -/--	1, 16



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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Date of the actual completion of the international search

5 December 2000

Date of mailing of the international search report

12/12/2000

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## INTERNATIONAL SEARCH REPORT

International Application No

US 00/24456

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 8, no. 56, 14 March 1984 (1984-03-14) & JP 58 213647 A (FURUKAWA ELECTRIC CO. LTD. & NT&T CORP.), 12 December 1983 (1983-12-12) abstract ---	1,16
X	US 4 915 717 A (M.WATANABE ET AL.) 10 April 1990 (1990-04-10) figures 3-6 ---	1,16
X	PATENT ABSTRACTS OF JAPAN vol. 4, no. 34, 22 March 1980 (1980-03-22) -& JP 55 007508 A (NT&T CORP.), 19 January 1980 (1980-01-19) abstract; figures 2,5,6 ---	1,16
X	US 4 414 012 A (S.SUTO ET AL.) 8 November 1983 (1983-11-08) column 18, line 30 -column 19, line 6; figures 18A,18B ---	1,16
X	PATENT ABSTRACTS OF JAPAN vol. 14, no. 242, 23 May 1990 (1990-05-23) -& JP 02 064036 A (FUJIKURA LTD.), 5 March 1990 (1990-03-05) abstract; figures 1-5 ---	1,16
X	PATENT ABSTRACTS OF JAPAN vol. 18, no. 322, 20 June 1994 (1994-06-20) & JP 06 072733 A (FURUKAWA ELECTRIC CO. LTD.), 15 March 1994 (1994-03-15) abstract ---	1,16
A	PATENT ABSTRACTS OF JAPAN vol. 17, no. 1, 5 January 1993 (1993-01-05) & JP 04 240125 A (SUMITOMO ELECTRIC IND. LTD.), 27 August 1992 (1992-08-27) abstract -----	1,16

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

/US 00/24456

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 09227148	A	02-09-1997	NONE	
JP 05330844	A	14-12-1993	NONE	
JP 58213647	A	12-12-1983	JP 1588519 C JP 2010094 B	19-11-1990 06-03-1990
US 4915717	A	10-04-1990	EP 0150247 A AU 566069 B AU 2398084 A CA 1233080 A DE 3474657 D	07-08-1985 08-10-1987 08-08-1985 23-02-1988 24-11-1988
JP 55007508	A	19-01-1980	JP 1111911 C JP 57002660 B	16-09-1982 18-01-1982
US 4414012	A	08-11-1983	JP 1046459 B JP 1581667 C JP 57170832 A JP 1255878 C JP 57170833 A JP 59034661 B JP 1445256 C JP 57051144 A JP 62053450 B JP 57056335 A JP 1436651 C JP 57082131 A JP 62030144 B JP 1436652 C JP 57082132 A JP 62030145 B JP 57092530 A CA 1188895 A DE 3136429 A FR 2489808 A GB 2083806 A,B NL 8104196 A,B, KR 8601248 B	09-10-1989 11-10-1990 21-10-1982 12-03-1985 21-10-1982 23-08-1984 30-06-1988 25-03-1982 10-11-1987 03-04-1982 25-04-1988 22-05-1982 30-06-1987 25-04-1988 22-05-1982 30-06-1987 09-06-1982 18-06-1985 09-06-1982 12-03-1982 31-03-1982 01-04-1982 01-09-1986
JP 02064036	A	05-03-1990	NONE	
JP 06072733	A	15-03-1994	NONE	
JP 04240125	A	27-08-1992	NONE	